

Short-Wave Radio Connections with the System, model SEG 100 D

The Short-wave range (1.6 MHz to 30 MHz) occupies a particular position in the range of radio connections due to its properties of propagation. The greater part of the transmitted energy is reflected from the soil and is reradiated as a space wave. This space wave is reflected differently by the ionosphere, depending on the time of day and the seasons. That means, that the transmission conditions change several times during the run of a day. For distances up to approx. 1000 km the frequency range 1.6 MHz to 8 MHz is suited particularly when utilizing steeply radiating antennas.

Since the reflecting property of the ionosphere is frequency-selective, the single sideband (SSB) transmission yields advantages. Apart from the improved utilization of channel, the interfering influence introduced by fading or external sources of interference is reduced.

Short-wave ~~antennae~~ exhibit a complex input impedance depending on the frequency. This input impedance must be transferred by a transformation circuit to the real working impedance of the linear RF power amplifier. Due to the frequent necessary change of frequency, a highly stable decadic generation of frequency, and automatic matching yield decisive advantages.

The proper selection of modes of transmission play an important role with short-wave connections. Apart from the telephony mode of transmission A3J with AF bandwidth also the telegraphy modes of transmission A1, F1 and A2J as narrow-band telegraphy, and A7J as wide-band telegraphy (AF bandwidth) are used. The modes of transmission A3J and F1 can be handled simplest during the procedure of operation.

The System, model SEG 100 D has been developed in the VEB FUNKWERK KOEPENICK in order to meet all requirements posed to stable short-wave radio connections. The model SEG 100 D consists of the following sub-units:

- Transmitting/Receiving Unit, model SEG 100 D
A 100 W transmitting/receiving unit with decadic adjustment of frequency (synthesizer) and automatic matching to all existing antennas
For battery or mains operation, mobile or stationary application
- Transmitting Dipole Antenna, model SDA 100
Steeply radiating transmitting antenna, stationary or mobile
- Transmitting Rod Antenna, model SSA 100
Low radiating rod antenna
- Teletypewrite Attachment, model FZ 100
Additional unit for handling teletypewrite traffic with single frequency simplex operation
- Remote Modulation Facility, model FMB 01, FMA 01
Facility for the remote modulation of model SEG 100 D and connection of terminal units for establishing a radio operator's working position. When using a separate receiver, two-frequency duplex operation is possible with mode of transmission F1
- Comprehensive system accessories.